

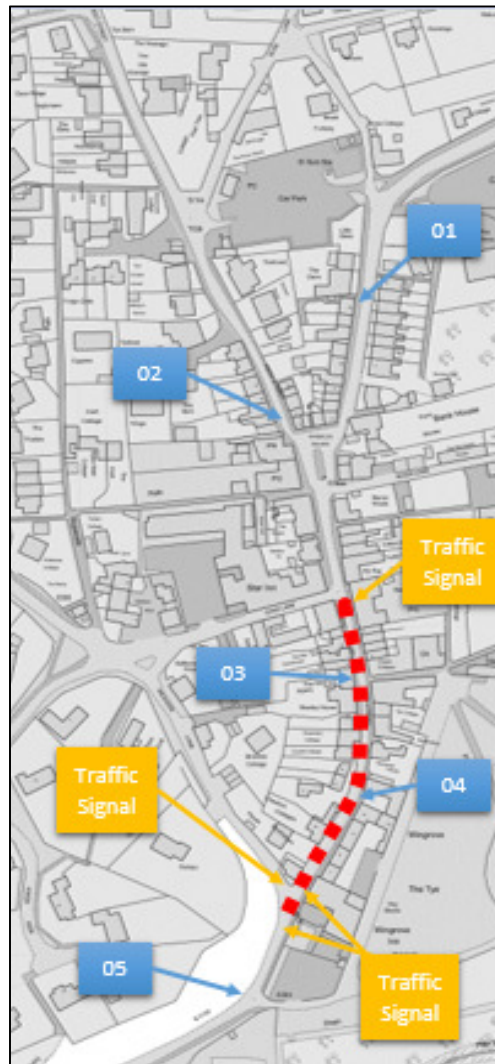
## Appendix 4 - Traffic Data Analysis

# 1.1 Traffic Speed Surveys

## 1.1.1 Approach

To determine the impact the temporary traffic signals and 20mph speed limit had on traffic speeds within the village, traffic speed data was collected at five locations along the High Street, North Street and West Street during the trial period. The locations of the monitoring sites corresponded to sites where traffic speed data was captured during 2016.

*Figure 1.1.1: Location of Monitoring Sites*



## 1.1.2 Results

Table 1.1.1 provides a summary of the 85th percentile speeds recorded whilst the traffic signals were in operation as well as the speeds recorded during the times when only the 20mph speed limit trial was in effect. These speeds are compared to the data obtained in 2016. The figures stated are combined two way flows (in each direction). The 85th percentile speed is the speed at, or below, which 85 percent of the traffic is travelling. Viewed another way, this is the speed that only 15 percent of drivers exceed.

*Table 1.1.1: 85th percentile speeds recorded*

Site	2016 speed data (No traffic signals)	2018 speed data (Traffic signals & 20mph limit)	2018 speed data (20mph limit only)
01	25 mph	25 mph	25 mph
02	22 mph	20 mph	20 mph
03	22 mph	20 mph	21 mph
04	Site not used	21 mph	21 mph
05	32 mph	29 mph	30 mph

Table 1.1.2 provides a summary of the distribution of traffic speed throughout the day for Site 03 taken in 2018 and compared against the data obtained in 2016. Site 03 was positioned in the High Street under traffic signal control. Community feedback indicated traffic speeds had increased through this section because of the traffic signals as drivers felt confident they would not encounter opposing traffic.

*Table 1.1.2: Site 03 speed distribution*

Recorded Speed (mph)	2016 speed data (No traffic signals)		2018 speed data (Traffic signals & 20mph limit)	
	Number of vehicles	%	Number of vehicles	%
<11	56	3	53	2
11 - <16	692	33	1235	41
16 - <21	1014	48	1490	49
21 - < 26	312	15	218	7
26 - <31	34	2	19	1
31 - <36	4	0	2	0
>36	0	0	0	0
<b>Total</b>	<b>2,111</b>	<b>100</b>	<b>3,017</b>	<b>100</b>

### 1.1.3 Analysis

Prior to the start of the trial scheme it was considered traffic speeds at the approaches to the traffic signals may decrease, as traffic would tend to queue at the lights. Based on the data collected this seems to be the case. However, it was considered traffic speed between the traffic signals may increase as drivers may be less cautious given the traffic signals are indicating they can proceed. Based on the data gathered it suggests speeds have not increased because of signalising part of the High Street.

With this said, site observation did record instances of driver frustration or a change in driver behaviour due to the temporary signals. Instances were recorded where individual drivers would accelerate towards the green light to ensure they could pass through the signal control.

## 1.2 Journey Times Surveys

### 1.2.1 Approach

To determine the impact the temporary traffic signals and 20mph speed limit had on journey times through the village, a series of journey time surveys were conducted in advance of and during the trial period. Journeys were timed between the Lullington Road/Alfriston Road junction, to the north of the village, and the private access to the Rathfinny Estate to the south of the village, a distance of approximately 1.6km (1 mile).

### 1.2.2 Results

Tables 1.2.1 and 1.2.2 provide a summary of the results obtained from the journey time surveys.

*Table 1.2.1: Journey time surveys – Northbound Traffic*

Time period	13 September 2018 (No traffic signals)	04 October 2018 (Traffic signals & 20mph limit)
07:00 to 10:00	167 seconds	199 seconds
12:00 to 14:00	189 seconds	205 seconds
15:00 to 18:00	189 seconds	202 seconds

*Table 1.2.2: Journey time surveys – Southbound Traffic*

Time period	13 September 2018 (No traffic signals)	04 October 2018 (Traffic signals & 20mph limit)
07:00 to 10:00	170 seconds	220 seconds
12:00 to 14:00	169 seconds	183 seconds
15:00 to 18:00	169 seconds	208 seconds

### 1.2.3 Analysis

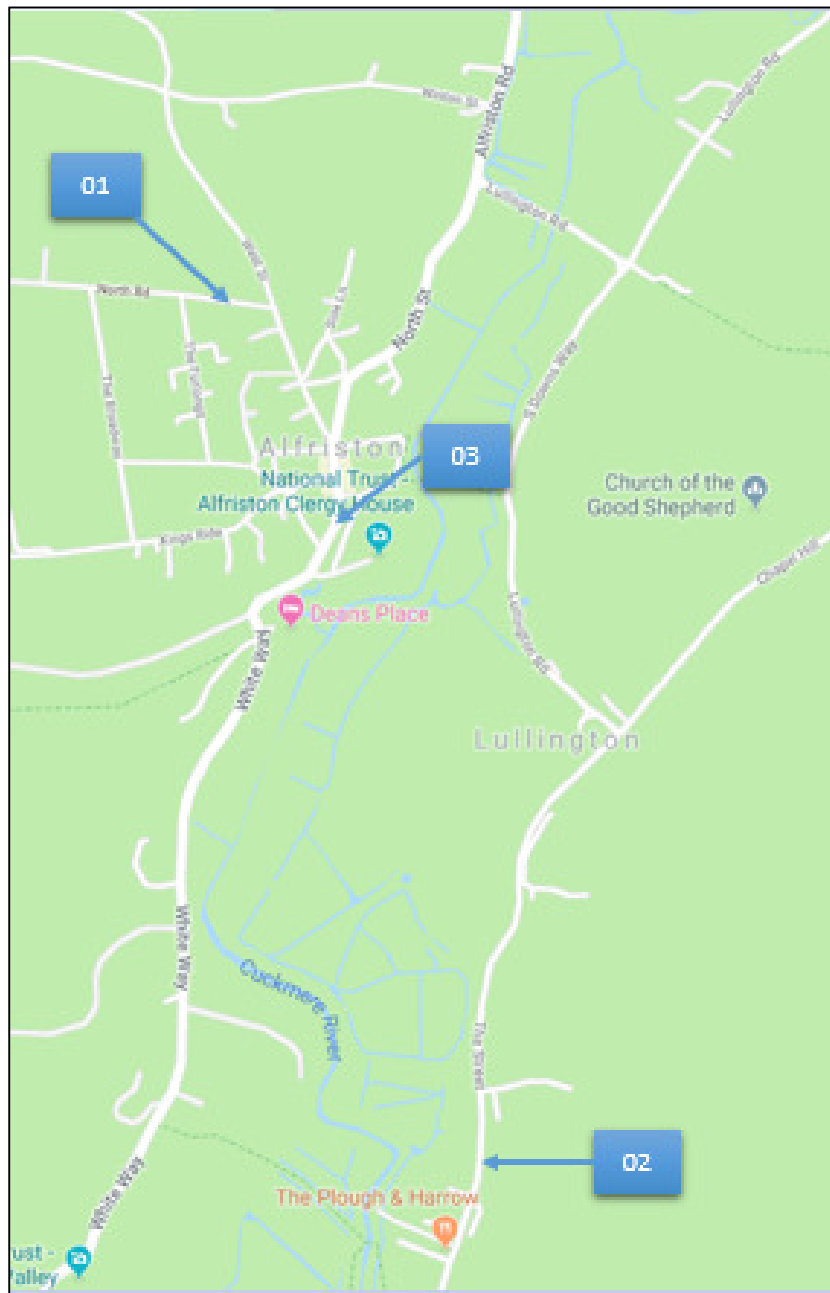
Based on the information gathered, journey times have increased because of the introduction of traffic signals in the High Street for both southbound and northbound traffic. This increase is a result of vehicles having to wait at the signals, a condition inherent to this type of measure. Under current conditions, unless during periods when two larger vehicles are unable to pass, traffic generally remains free flowing.

## 1.3 Traffic Re-distribution

### 1.3.1 Approach

The introduction of traffic signals created a risk that traffic would avoid Alfriston High Street and use alternative routes. Monitoring sites were set up in the High Street, on North Road and on The Street in Lullington to record fluctuations in traffic flows during and after the traffic signals were in operation, as shown in Figure 1.3.1 below.

*Figure 1.3.1: Location of Monitoring Sites*

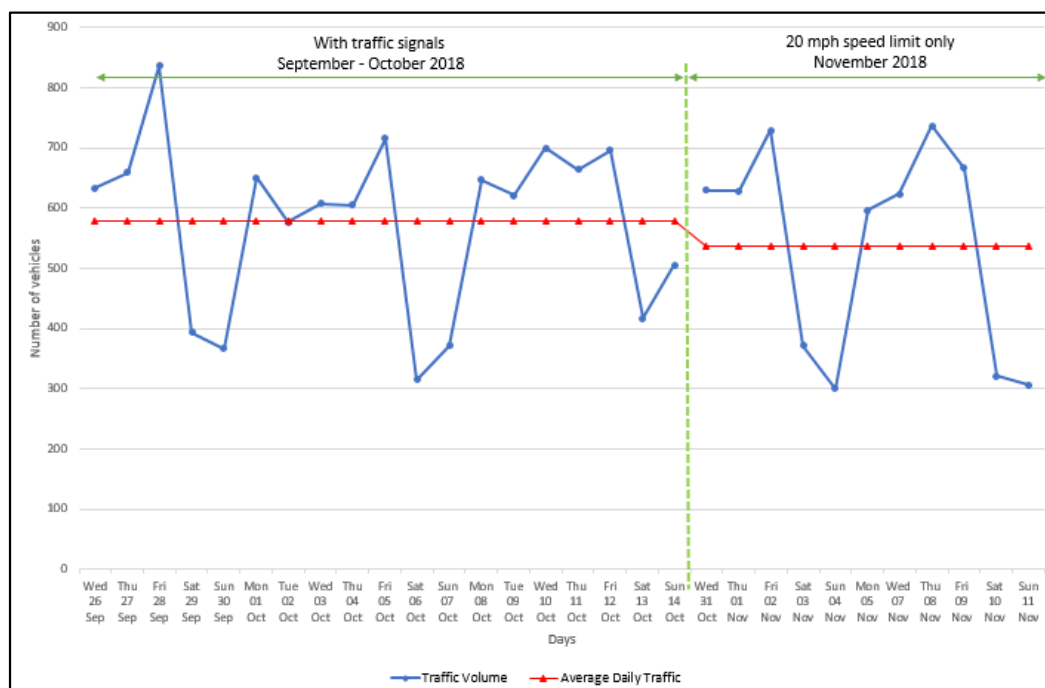


Site 01 – North Road  
Site 02 – The Street  
Site 03 – The High Street

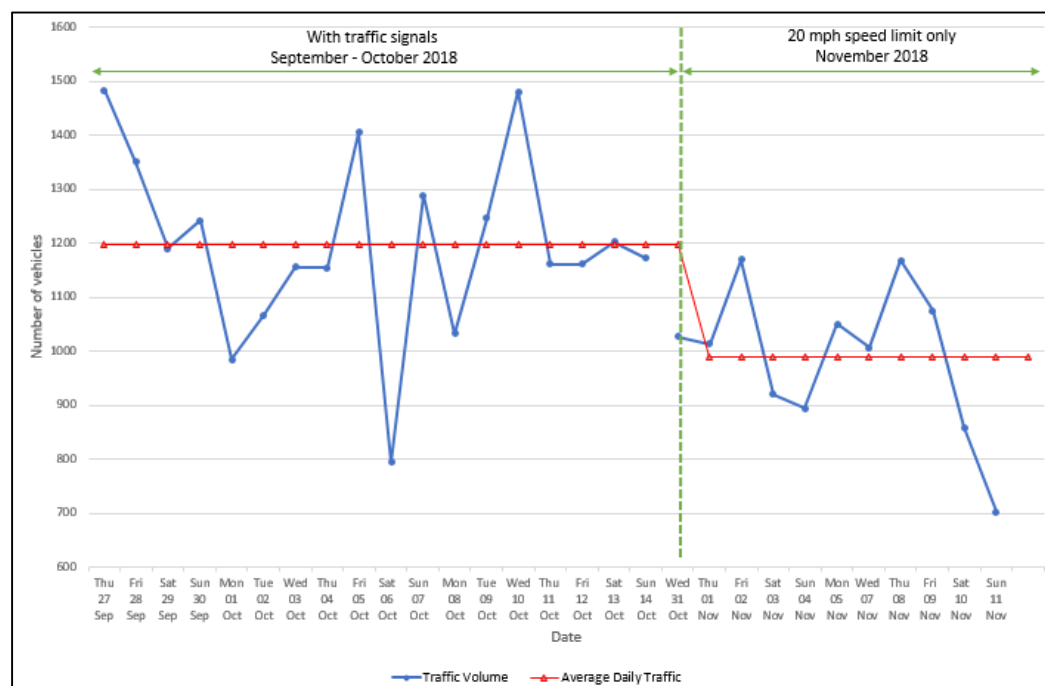
## 1.3.2 Results

Figures 1.3.2, 1.3.3 and 1.3.4 provide a summary of the daily traffic flows recorded from the traffic count surveys on North Road, The Street and the High Street respectively.

*Figure 1.3.2: Site 01, North Road Traffic Count Surveys Results*



*Figure 1.3.3: Site 02, The Street Traffic Count Surveys Results*



*Figure 1.3.4: Site 03, The High Street Traffic Count Surveys Results*



### 1.3.3 Analysis

Based on the information gathered at Sites 01 and 02, traffic flows did increase whilst the traffic signals were in operation. Average daily traffic flow increased by 8% and 21% on North Road and The Street respectively.

The information gathered at Site 03, the High Street, shows an increase in daily traffic from 2016 to 2018. There is insufficient evidence to explain this variance other than a general increase in background traffic over the two-year period combined with the fact that surveys were conducted at different times of the year. The 2016 survey was conducted in February whereas the 2018 surveys were carried out in September to October. Reviewing data from the County Council fixed traffic counter located at 'High and Over' on the Alfriston Road, annual trends in 2017 and 2018 indicate lower traffic levels in February than during the autumn.

Considering the two data sets collected in 2018 at Site 03, traffic flows did marginally reduce whilst the traffic signals were in operation. Average daily traffic flow decreased by 2% during the trial traffic signal period.

Overall, the information gathered suggests traffic was being redistributed on other roads to avoid the traffic signals. This data was supported by feedback received from the community during the trial, particularly along North Road where Alfriston Primary school is located. Traffic transferal to lower classified roads is less desirable. Should a traffic signal scheme be progressed, consideration would be needed for the introduction of further mitigation such as traffic calming to discourage through traffic on these roads.



## 1.4 Queue Length Surveys

### 1.4.1 Approach

Manual queue length surveys were conducted at both Star Lane and Weavers Lane junctions on sample week and weekend days to monitor how often the traffic signals could clear queuing traffic in a single green cycle. Lengths of queues were also monitored.

### 1.4.2 Results

Tables 1.4.1 to 1.4.3 provide a summary of the results obtained from the surveys.

*Table 1.4.1: Frequency of High Street traffic clearing on a signal green phase*

Sample Day	Time Period	Star Lane Junction	Weavers Lane Junction
Thursday 4 October	07:00 to 19:00	94%	94%
Saturday 6 October	08:00 to 17:30	97%	97%
Wednesday 10 October	13:00 to 19:00	90%	86%

*Table 1.4.2: Average and Maximum queue lengths on the High Street (southbound traffic) at Star Lane Junction*

Sample Day	Time Period	Average (PCUs)	Maximum (PCUs)
Thursday 4 October	07:00 to 19:00	5.00	44.00
Saturday 6 October	08:00 to 17:30	3.00	15.00
Wednesday 10 October	13:00 to 19:00	6.34	44.00

*Table 1.4.3: Average and Maximum queue lengths on the High Street (northbound traffic) at Weavers Lane Junction*

Sample Day	Time Period	Average (PCUs)	Maximum (PCUs)
Thursday 4 October	07:00 to 19:00	4.00	17.00
Saturday 6 October	08:00 to 17:30	3.00	14.00
Wednesday 10 October	13:00 to 19:00	6.41	36.00

### 1.4.3 Analysis

The queue length surveys conducted over the sample days indicate the traffic signals performed well for most of the time, with queuing traffic being able to pass the traffic lights in a single cycle. This level of performance is consistent with site observations and footage from the video surveys that had also been carried out. However, there were instances where traffic queues were unable to clear in a single cycle and this resulted in congestion

and at times 'grid lock' in Market Square and North Street. This in turn meant northbound traffic was redirected to the west side of the Square and via West Street and The Dene Carpark to avoid North Street. This finding is consistent with the footage from the video surveys.

## 1.5 Video Observations Surveys

### 1.5.1 Approach

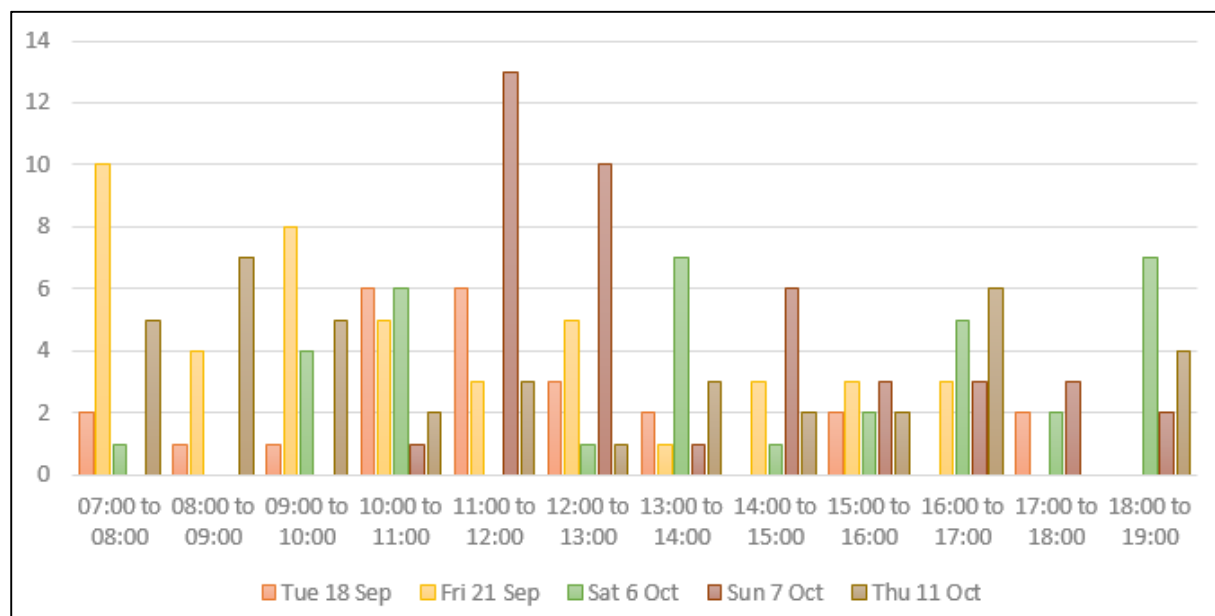
To monitor traffic behaviour during the trial periods, 12-hour video surveys were carried out over sample days at the following sites:

- North Street, at Willows Car park entrance looking south;
- Sloe Lane junction, looking south towards North Street;
- Market Square, looking south towards Star Lane junction;
- High Street, at The Old Chapel Centre looking north towards Star Lane junction;
- High Street, at The Coach House Gallery looking north up the High Street;
- High Street, at The Coach House Gallery looking south towards Weavers Lane junction;
- The Tye junction, looking north towards Weavers Lane junction.

### 1.5.2 Observations at Weavers Lane Junction

Site observations and video survey footage indicated the eastern footway, by Wingrove House, was regularly overrun by southbound traffic. The narrow carriageway width coupled with queuing stationary northbound traffic at the traffic signals resulted in southbound traffic occasionally having to use the footway to pass. The frequency of this occurrence is illustrated in figure 1.5.1 below.

*Figure 1.5.1 Frequency of footway overrun at Weavers Lane junction.*



*Photograph 1.5.1 View looking north towards Weavers Lane. Northbound traffic queuing at traffic signals whilst southbound traffic passes. Southbound vehicles often over-ran the footway adjacent to Wingrove House.*



Weavers Lane itself was not covered by the video footage. Supplementary site observations together with community feedback indicated the limited carriageway width at the point where vehicles were instructed to wait at the signals hampered two-way traffic movement. In turn this prevented vehicles exiting the High Street into Weavers Lane and resulted in congestion as traffic could not clear the junction. Should a permanent traffic signal solution be taken forward, a review of the location of the stop line will be needed to ensure opposing traffic can pass on Weavers Lane to prevent traffic blocking back into the High Street.

### 1.5.3 Observations at Star Lane Junction

The operation of Star Lane junction as part of a traffic signal solution was an issue identified prior to commencing the trial signal exercise. Star Lane operates as a two-way road with traffic allowed to enter and exit this narrow lane from the High Street. Consideration prior to the trial was made at making the road one-way to prevent vehicle access to the High Street. If this was to be introduced not only would this impact access to individual properties but it would also require re-routing part of the South Downs Way (National long distance trail) to avoid cyclists, pedestrians and equestrians who use this route being sent along a one-way road. In view of this, it was considered Star Lane remained two way during the trial period, with turning restrictions imposed at its junction with the High Street. Traffic could only turn left out of Star Lane onto the High Street (right turn ban) with a temporary ban preventing northbound traffic on the High Street entering Star Lane. The junction was monitored over the trial period.



*Photograph 1.5.2 View looking north along the High Street towards Star Lane. Temporary 'left turn' ban imposed during trial period preventing northbound traffic entering Star Lane.*



*Photograph 1.5.3 View looking towards the High Street from Star Lane. Temporary 'right turn' ban imposed during trial period preventing traffic turning right out of Star Lane.*



Based on observations made during the trial, should traffic signals be introduced, it would be recommended Star Lane be converted to a one-way road preventing vehicle access onto the High Street.

From a safety perspective, the limited visibility required vehicles to 'creep' out of the junction. High Street traffic would have to give way to emerging side road vehicles. Whilst this situation already occurs, it is considered this would have more of an impact should traffic signals be introduced since it would hinder the movement of northbound High Street traffic leaving the section of road under signal control.

On the second day of the trial (18 September 2018) a collision did occur at the junction between a vehicle emerging from Star Lane (turning left) and a vehicle traveling north along the High Street. Whilst video footage recorded the incident, there is insufficient details to determine whether the trial contributed to the event or which driver was at fault. Discussion with Sussex Police confirmed no incident report was logged. After this event, additional warning signs were erected to further enhance driver awareness of the junction and the temporary turning restrictions in place.

On the matter of traffic signal efficiency, instances of delay at the traffic signals at Star Lane were observed because of conflicting turning movements at the junction. At times, southbound vehicles wishing to enter Star Lane were prevented from doing so because there were vehicles needing to leave the junction. This then prevented southbound queues from clearing the traffic signals. Converting Star Lane to one-way operation would address this situation as vehicles would only be permitted to enter Star Lane from the High Street.

#### 1.5.4 Observations at Market Square

The operation of signals and their impact on Market Square was a key aspect the trial looked to assess. Following the initial review of the 2016 consultation proposals it was recommended the north set of traffic signals be positioned further south, at Star Lane junction, to mitigate any potential impacts queuing traffic would have on the Square. As discussed in the report presented at the Lead Member meeting held in May 2018, creating a situation where northbound traffic is regularly passing on the west side of the island would have a negative impact to both the aesthetics and the operation of the square. In terms of safety, poor visibility coupled with narrow carriageway width does not make North Street junction conducive as the primary thoroughfare for northbound traffic. Northbound vehicles having to pass on the west side of the island would need to make a tight left turn manoeuvre back into North Street to continue their journey north.

Traffic modelling undertaken during 2017 indicated traffic would queue back past Market Square during peak periods. The intention of the trial was to confirm if this assessment was correct but also determine the impact traffic signals would have during other periods of the day.

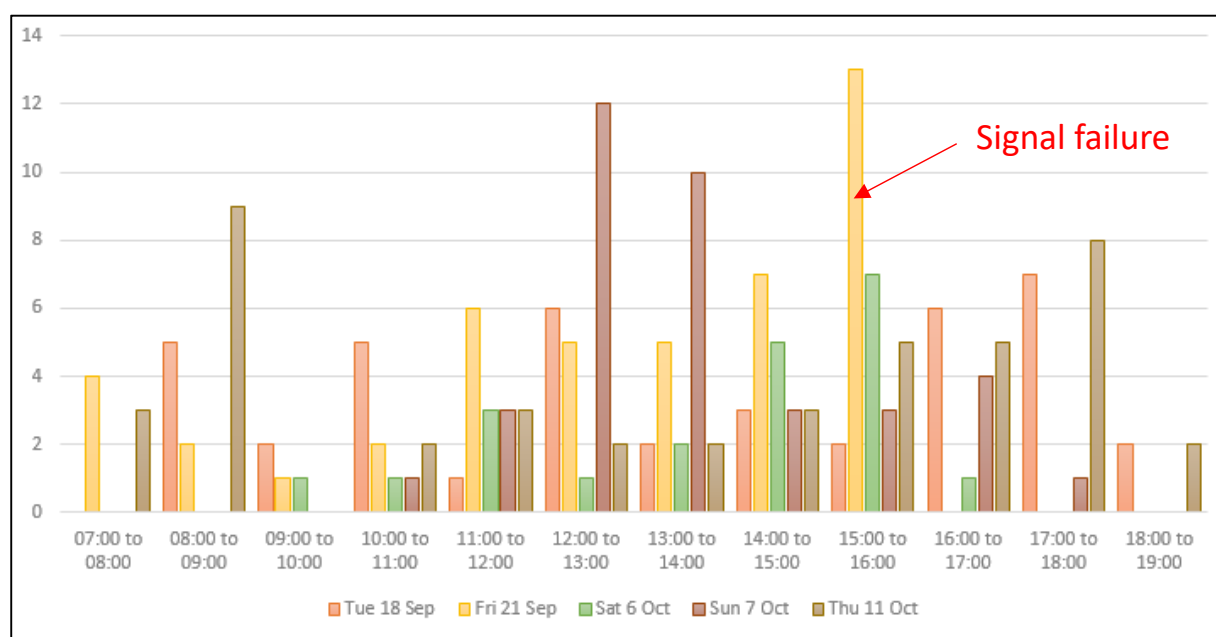
As the queue length surveys indicated, the traffic signals performed well in clearing queuing traffic in a signal cycle. However, the video observations demonstrated northbound vehicles were regularly passing on the west side of Market Square because of queuing southbound traffic from Star Lane. This is shown in the following photograph.

*Photograph 1.5.4 Northbound traffic passing on the west side of the island due to southbound queues.*



Whilst the trial increased the distance between the stop line and Market Square when compared to the 2016 consultation proposals, this still only provided sufficient space to allow seven to eight vehicles to queue. Any increase in this queue would generally see northbound vehicles being re-directed on the west side of the island. As shown in figure 1.5.2 this was observed throughout the day and not just during peak periods.

*Figure 1.5.2 Frequency of vehicles queuing back past Market Square*



*(Note: On Friday 21 September between 15:00 and 16:00 the traffic signals failed, creating excessive queues. The signals were subsequently switched off over the following weekend)*



Congestion was exacerbated at Market Square when delivery vehicles were present, as these generally blocked the route for northbound traffic. This is shown in the following photographs.

*Photograph 1.5.5 Delivery vehicle at Market Square blocking west side of island.*



*Photograph 1.5.6 'Grid lock' situation because of southbound vehicle queues and congestion at Market Square.*





### 1.5.5 Observations at West Street and North Street

The impacts observed at North Street and West Street were a direct consequence of events at Market Square. Whilst there was no camera coverage at West Street, site observations together with community feedback indicated northbound vehicles used West Street and The Dene Carpark to avoid North Street during times of congestion.

At North Street, based on the survey results, southbound vehicle queues did extend into North Street from Market Square. Whilst camera footage was unable to pick up this occurrence, community feedback together with on-site observations recorded instances where northbound traffic had to mount the footway to pass southbound queuing traffic, as shown in the following photograph. Given the narrow highway corridor, vehicles were at times passing close to property frontages. No instances of property damage were reported to East Sussex Highways during the trial period.

*Photograph 1.5.7 Footway over-run observed along North Street as northbound traffic tried to pass southbound queues.*



### 1.5.6 Observations of the temporary parking suspension on the High Street.

To facilitate the trial of traffic signals, the existing waiting restriction (single yellow line) in the High Street, north of Star Lane, was temporarily revoked. Whilst the trial demonstrated that this temporary suspension was a necessity during the operation of the traffic signals, it also showed that the removal of parking during the 20mph speed limit only trial seemed to improved traffic flow through the centre of the village.

Instances were observed where the cones used to prevent parking did impede traffic flow as this reduced carriageway width. In turn this impacted the operation of the traffic signals. Whether a permanent traffic signal scheme is taken forward or not, alterations to the current parking arrangements in the High Street and Market Square should still be considered further. As part of any investigation into this measure, it will be necessary to consider the effective enforcement of any future parking restriction.